

Listing of Claims:

1. (currently amended) A low voltage, 5V tolerant buffer, comprising:

a series connection of at least three transistors, a terminal of an upper transistor in said series connection being connected to a PAD, and a terminal of a lower transistor of said series connection being connected to ground; and

a bias generator, an output of said bias generator being connected to a gate of said upper transistor; and

an input stage driven by a node between said central transistor and said lower transistor;

wherein a gate of a central one of said series connection of three transistors is adapted to be connected to a power supply of no greater than 2.5V nominal; and

said buffer is a bi-directional buffer.

2. (currently amended) The low voltage, 5V tolerant buffer according to claim 1, wherein said bias generator comprises:

a series connection of two p-channel field effect transistors;

said series connection of said two transistors being connected between said power supply and said ~~ground~~ PAD .

3. (original) The low voltage, 5V tolerant buffer according to claim 2, wherein:

a gate of one of said two transistors is adapted to be coupled to said PAD, and a gate of the other of said two transistors is adapted to be driven by said power supply.

4. (original) The low voltage, 5V tolerant buffer according to claim 1, wherein:

said upper transistor, said lower transistor, and said central transistor are each an n-channel field effect transistor.

5. (original) The low voltage, 5V tolerant buffer according to claim 1, wherein:

said buffer can reliably sink no more than about 16 milliamps of current.

6. (original) The low voltage, 5V tolerant buffer according to claim 1, wherein:

said buffer is comprised in a SCSI bus.

7. (original) The low voltage, 5V tolerant buffer according to claim 1, wherein:

said buffer is comprised in a PCI bus.

8. (original) The low voltage, 5V tolerant buffer according to claim 1, wherein:

said buffer is comprised in a PCMCIA bus.

9. (canceled)

10. (original) The low voltage, 5V tolerant buffer according to claim 1, further comprising:

an integrated circuit including said 5V tolerant buffer.

11. (original) The low voltage, 5V tolerant buffer according to claim 1, wherein:

a channel width of at least one of said at least three transistors is at least 400 um.

12. (original) The low voltage, 5V tolerant buffer according to claim 1, wherein:

said series connection of at least three transistors is a series connection of a current path of each of said at least three transistors.

13. (original) The low voltage, 5V tolerant buffer according to claim 1, wherein:

each of said at least three transistors are a field effect transistor.

14. (currently amended) A method of providing a low voltage, 5V tolerant buffer, comprising:

providing a series connection of at least three transistors;

connecting an end of an upper transistor in said series connection to a PAD;

connecting an end of a lower transistor of said series connection to ground;

providing a bias voltage to a gate of said upper transistor, said bias voltage being based on a difference between a power supply voltage and a voltage at said PAD; and

providing a power supply input to a gate of a central one of said series connection of three transistors; and

providing an input stage adapted to be driven by a node between said central transistor and said lower transistor.

15. (original) The method of providing a low voltage, 5V tolerant buffer according to claim 14, further comprising:

providing a power supply voltage of no greater than 2.5V nominal.

16. (original) The method or providing a low voltage, 5V tolerant buffer according to claim 14, further comprising:

providing a power supply voltage of no greater than 2.0V nominal.

17. (original) The method of providing a low voltage, 5V tolerant buffer according to claim 14, further comprising:

providing a power supply voltage of no greater than 1.8V nominal.

18. (canceled)

19. (original) The method of providing a low voltage, 5V tolerant buffer according to claim 14, wherein:

said buffer is comprised in a SCSI bus.

20. (currently amended) Apparatus for providing a low voltage, 5V tolerant buffer, comprising:

means for inverting an input signal to a series connection of an upper transistor, a central transistor, and a lower transistor;

means for connecting a terminal of said ~~an~~ upper transistor ~~in said series connection~~ to a PAD;

means for connecting a terminal of said a lower transistor ~~of said series connection~~ to ground;

means for providing a bias voltage to a gate of said upper transistor, said bias voltage being based on a difference between a power supply voltage and a voltage at said PAD; and

means for coupling a power supply input to a gate of said a central ~~one of said series connection of three transistors~~ transistor; and

means for providing an input stage adapted to be driven by a node between a central transistor and said lower transistor;

wherein said buffer is a bi-directional buffer.

21. (currently amended) The apparatus for providing a low voltage, 5V tolerant buffer according to claim 20, further comprising:

means for providing a said power supply voltage of no greater than 2.5V nominal.

22. (currently amended) The apparatus for providing a low voltage, 5V tolerant buffer according to claim 20, further comprising:

means for coupling a said power supply voltage of no greater than 2.0V nominal.

23. (currently amended) The apparatus for providing a low voltage, 5V tolerant buffer according to claim 20, further comprising:

means for providing a said power supply voltage of no greater than 1.8V nominal.

24. (canceled)

25. (original) The apparatus for providing a low voltage, 5V tolerant buffer according to claim 20, wherein:

said buffer is comprised in a SCSI bus.

26. (new) A low voltage, 5V tolerant buffer, comprising:

a series connection of at least three transistors, a terminal of an upper transistor in said series connection being connected to a PAD, and a terminal of a lower transistor of said series connection being connected to ground; and

a bias generator, an output of said bias generator being connected to a gate of said upper transistor;

wherein a gate of a central one of said series connection of three transistors is adapted to be connected to a power supply of no greater than 2.5V nominal; and

wherein said bias generator comprises a series connection of two transistors between said power supply and said PAD.

27. (new) The low voltage, 5V tolerant buffer according to claim 26, wherein:

an upper transistor of said bias generator has a gate being connected to said PAD.

28. (new) The low voltage, 5V tolerant buffer according to claim 27, wherein:

a lower transistor of said bias generator has a gate being connected to said power supply.

29. (new) A low voltage, 5V tolerant buffer, comprising:

a series connection of at least three transistors, a terminal of an upper transistor in said series connection being connected to a PAD, and a terminal of a lower transistor of said series connection being connected to ground; and

a bias generator, an output of said bias generator being connected to a gate of said upper transistor, said bias generator comprising:

a series connection of two p-channel field effect transistors, a gate of one of said two transistors is adapted to be coupled to said PAD, and a gate of the other of said two transistors is adapted to be driven by said power supply, and

said series connection of said two transistors being connected between said power supply and said PAD;

wherein a gate of a central one of said series connection of three transistors is adapted to be connected to a power supply of no greater than 2.5V nominal.